Macro-Prudential Policy: Design and Implementation

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The views expressed herein are those of the author and should not be attributed to the IMF, its Executive Board, or its management.
Financial Stability and the Need for a New Policy Framework
Definition of Financial Stability

Likely to have lasting financial stability when there is:

1. Monetary stability (or domestic price stability)
2. Employment close to economy’s “natural” rate
3. Efficient and smooth transfer of resources from savers to investors
4. Financial risks assessed and priced reasonably accurately, and relatively well managed
5. Confidence that financial system will be able to absorb real and financial shocks
**Definition of Financial Instability**

**Financial instability** is a situation characterized by three features:

1. **important financial asset prices seem to diverge sharply from fundamentals; and/or**

2. **market functioning and credit availability are significantly distorted, with the result that**

3. **aggregate spending deviates (or is likely to deviate) significantly, either above or below, from the economy’s ability to produce.**
Financial Intermediation

Source: FSB

(Interconnected via bank sponsorship, liquidity puts, repo markets, funding flows, securities lending)
Post Crisis: Need for a New Policy Framework

- Pro-cyclicality
- Contagion in a highly interconnected financial system
- Price stability is not enough
- Market discipline is not enough
- Self-regulation has obvious shortcomings
- Risk concentration
- Risk mispricing and deficient risk management
- Distorted incentives and compensation structures
- Regulatory structures are never comprehensive
- Surveillance cannot be perfect
- Fiscal resources for government interventions
Interconnectedness

Close symbiotic relationship between and among financial institutions and markets:

• Banks increasingly rely on markets to obtain external funding, provide investments, and manage risks (through derivatives).

• Markets rely on banks (and nonbanks) for market-making, back-stop liquidity services, and insurance.

• Management of risks is predicated on liquid markets, and the growth of OTC instruments for trading risks.
Endogenous Risk

• Risk generated and amplified by the system
• Agents react to changes in the market, and their actions in turn may affect market prices and the financial environment
• Role of market prices, especially for a financial system dependent on marketable assets
• Banks and other financial institutions react based on price-sensitive incentive schemes and risk management systems
Desirable Features of a New Framework

- Countercyclical
- Symmetry between boom and bust phases of financial cycles
- System-wide focus
- Coverage of the entire financial system
- Long horizon
- Holistic approach
Macro-Prudential Policy
Policies and Objectives
How we saw the world before the financial crisis

Macroeconomic Policies

Price Stability
Economic Activity

Microprudential Policy

Idiosyncratic Risk
Policies and Objectives
How we see the world now

Macro - Prudential

Macroeconomic Policies

MacroPrudential Policy

MicroPrudential Policies

Price Stability
Economic Activity

Financial Stability
Systemic Risk

Idiosyncratic Risk
What is Macro-Prudential Policy?

Policies that limit systemic risk by

- dampening the build-up of financial imbalances
- building defenses that contain the speed and sharpness of downswings and their effects
- identifying and addressing common exposures, risk concentrations, linkages, and connections that are sources of contagion and spillover risks
- focusing on all banks, nonbanks, instruments, markets, financial infrastructure
Nature of Macro-Prudential Policy

• Focus on systemic risk
• Externalities leading to systemic fragilities
  – interconnectedness
  – strategic complementarities
  – fire sales of financial assets
• Dampen effects of business & financial cycles
• Time dimension: evolution of aggregate risk
• Cross-sectional dimension: distribution of risks
Financial Stability Framework and Macro-Prudential Policy

Source: IMF, Key Aspects of Macro-Prudential Policy (2013)
Macro-Prudential Policy Framework

- **Analytic framework** (identification & monitoring of systemic risks; reporting requirements; data collection and analysis; assessment)

- **Set of instruments** (rules governing use; calibration; assessing policy effectiveness)

- **Institutional architecture** (structure, governance, coordination, transparency, accountability)
Macro-Prudential Policy: Design and Implementation
Macro-Prudential Policy Design

• Combination of two kinds of policy strategies:
  ➢ Time-invariant regulation (baseline policies)
  ➢ Time-varying policies
    – Rules-based contingent on events
    – Discretionary

• Rules based policy is difficult to design

• Discretion opens the door to resistance
Macro-Prudential Policies

**Baseline Policies**
- Micro and Macro-prudential regulations

**Time-Varying Policies**
- Time-varying addition to baseline policies

**Rules-Based**
- Pre-set rules trigger changes in policies

**Discretionary**
- Authorities decide when & how to change policies
Hard to Measure Systemic Risk

• “Tail events” and limited historical experience
• Agglomeration of a variety of risks, and data collection from multiple sources & agencies
• Endogenous nature of risk
• Interlinkages and correlated exposures
• No single framework for triggers and risk amplification mechanisms—non-linearities, threshold effects, Knightian uncertainty
• No comprehensive operational definition
• Difficulties of creating early warning systems
Operational Challenges for Rules-Based Time Varying Policy

- Designing “actions” contingent on “events”
- Credible implementation when needed
- Ability to calibrate the macro-prudential toolkit
- Preventive actions based on a counterfactual
- Intermediate options: rules and markers as rough guides—rate of credit expansion, increases in property prices, growth of sectoral and economy-wide leverage
Discretion Opens the Door to Resistance

- Uncertainty in risk measurement
- Political and lobbying pressures
  - target a single or few sectors
  - coordination among several agencies: data collection, information exchange, analysis, decision making, implementation
- Intellectual capture
### Macro-Prudential Regulator?

<table>
<thead>
<tr>
<th>Council / Committee for Macro-Prudential Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Bank</td>
</tr>
<tr>
<td>(Monetary Authority, Liquidity Provider)</td>
</tr>
<tr>
<td>Micro-Prudential Bank Regulator(s)</td>
</tr>
<tr>
<td>(SIBs and non-SIBs)</td>
</tr>
<tr>
<td>Markets Regulator</td>
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<tr>
<td>(Money, Capital, Derivatives)</td>
</tr>
<tr>
<td>Markets Regulator</td>
</tr>
<tr>
<td>(Conduct of Business / Consumer Protection)</td>
</tr>
<tr>
<td>Treasury / Ministry of Finance</td>
</tr>
<tr>
<td>Other Regulators</td>
</tr>
<tr>
<td>(Insurance, Competition, etc.)</td>
</tr>
</tbody>
</table>
# Main Macro-Prudential Tools

<table>
<thead>
<tr>
<th>Agency</th>
<th>Macro-prudential tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central bank</td>
<td>• Bank reserve requirements</td>
</tr>
<tr>
<td></td>
<td>• Foreign exchange / reserve management</td>
</tr>
<tr>
<td></td>
<td>• Capital requirements (systemic surcharges)</td>
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<tr>
<td></td>
<td>• Liquidity requirements</td>
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<tr>
<td></td>
<td>• Leverage requirements</td>
</tr>
<tr>
<td></td>
<td>• Rules on maturity and currency mismatches</td>
</tr>
<tr>
<td></td>
<td>• Collateral rules (e.g. LTVs)</td>
</tr>
<tr>
<td></td>
<td>• Credit growth caps</td>
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<td></td>
<td>• Sectoral exposure caps</td>
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<tr>
<td></td>
<td>• Disclosure regulations</td>
</tr>
<tr>
<td></td>
<td>• Risk-based deposit insurance pricing</td>
</tr>
<tr>
<td></td>
<td>• Bank resolution schemes (including living wills)</td>
</tr>
<tr>
<td>Bank regulator</td>
<td>• Accounting rules</td>
</tr>
<tr>
<td></td>
<td>• Restrictions on compensation structures</td>
</tr>
</tbody>
</table>
**Main Macro-Prudential Tools** (contd.)

<table>
<thead>
<tr>
<th>Agency</th>
<th>Macro-Prudential Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market regulator (financial market)</td>
<td>• Restrictions on financial contracts</td>
</tr>
<tr>
<td></td>
<td>• Collateral rules (e.g. margin requirements, haircuts)</td>
</tr>
<tr>
<td></td>
<td>• Regulations on short-selling</td>
</tr>
<tr>
<td></td>
<td>• Restrictions on trading venues (e.g. CCPs)</td>
</tr>
<tr>
<td></td>
<td>• Trading stops (e.g. circuit breakers)</td>
</tr>
<tr>
<td></td>
<td>• Disclosure requirements</td>
</tr>
<tr>
<td>Market regulator (consumer protection)</td>
<td>• Regulation of financial contracts (e.g. terms of mortgage contracts, DTIs)</td>
</tr>
<tr>
<td></td>
<td>• Rules on selling strategies (e.g. information provision to customers)</td>
</tr>
<tr>
<td>Treasury</td>
<td>• Financial transaction and other taxes</td>
</tr>
<tr>
<td></td>
<td>• Deductibility of interest payments on certain types of debt</td>
</tr>
<tr>
<td>Insurance regulator</td>
<td>• Regulation of systemically important insurers</td>
</tr>
</tbody>
</table>
The Macro-Prudential Decision Process

**Macroeconomic inputs**
- hard and soft data
  - Central Bank

**Financial sector inputs**
- hard and soft data
  - Bank Regulator
  - Market Regulator

**Systemic risk analysis**
- Central Bank

**Macro-prudential decision making**
- Agency: ?

**Public communication**
- Agency: ?

**Implementation**
- Bank and Market Regulators, Central Bank, Other agencies
Challenges Related to Coordination

• Information sharing, especially provision of soft information
• Assessment of risks
• Timing and calibration of interventions
• Implementation, separation of decision making and control of instruments
• Joint communication
Strong Baseline Policies Reduce Burden on Time-varying Policy

- Robust institutions in normal times
- Prevent or slowdown the creation of systemic risk
- Structure of financial industry
- Incentives created by organizational forms, activities, governance arrangements
- Rules and regulations
Macro-Prudential Policy: Practice
Five Steps to Operationalize Macro-Prudential Policy

1. Develop Capacity to Assess Systemic Risk
2. Select & Assemble Macro-Prudential Toolkit
3. Calibrate Tools, Communicate with the Public and Markets
4. Monitor & Close Regulatory Gaps
5. Identify and Close Data Gaps

Source: IMF, Key Aspects of Macro-Prudential Policy (2013)
# Capturing the Financial Cycle: Some Useful Indicators

<table>
<thead>
<tr>
<th>Macroeconomic indicators</th>
<th>Banking sector indicators</th>
<th>Market-based indicators</th>
<th>Qualitative information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad credit aggregates</td>
<td>Stress tests, bank risk metrics</td>
<td>Asset valuations in equity and property markets</td>
<td>Underwriting standards</td>
</tr>
<tr>
<td>Measures of debt sustainability (debt to income, debt service ratio)</td>
<td>Leverage ratios</td>
<td>Corporate bond and CDS spreads and risk premia</td>
<td>Asset quality</td>
</tr>
<tr>
<td>Maturity and currency mismatch</td>
<td>Maturity and currency mismatch</td>
<td>Margins and haircuts</td>
<td>Credit conditions</td>
</tr>
<tr>
<td>Indicators of funding vulnerabilities</td>
<td>Indicators of funding vulnerabilities</td>
<td>Lending spreads</td>
<td></td>
</tr>
</tbody>
</table>

CGFS, Paper #48, Dec 2012
Mapping Tools to Objectives: Structural Dimension

- **Capital surcharge**
- **Sectoral tools** (within financial system: risk weights, limits on large exposures, ....)
- **Liquidity Tools**
- **Changes to market infrastructures**

- **Increase resilience of Too-Big-To-Fail institutions**
- **Reduce excessive exposures within the system**
- **Funding market**
- **Derivatives market**

Source: IMF, Key Aspects of Macro-Prudential Policy (2013)
- Effective resolution regimes
- Resolution plans
- CoCos/Bail-in
- Strengthened market infrastructure
- Levies, fees, or taxes

- Size
- Interconnectedness
- Complexity
- Lack of substitutability
- Global activity

Measures to reduce cost of failure

Measures to directly reduce systemic importance

Identifying systemically important institutions

Capital/liquidity surcharges
- CoCos/Bail-in
- Recovery plans
- Disclosure
- Intensive supervision
- Compensation

Measures to reduce likelihood of failure

Institutions focused on scope of activities

In size and structure
Mapping Tools to Objectives: Time Dimension

Countercyclical capital buffer & provisions

Resilience to shocks

Excessive Credit Growth

Sectoral vulnerabilities to:
Asset Prices, Exchange Rates, Interest Rates etc.

Overexposure to funding shocks

Sectoral tools
(sectoral capital requirements, limits on LTV and DTI ratios)

Liquidity Tools

Source: IMF, Key Aspects of Macro-Prudential Policy (2013)
Timing of Activation

1. Assessment of the building up of vulnerabilities and probability of a systemic shock

3. Uncertainty in the systemic risk assessment
Effectiveness

3. **Nature and robustness of links between changes in the instrument and the policy objective**

4. **Effect on expectations**

5. **Scope for leakages and arbitrage**

6. **Speed, flexibility and ease with which the instruments can be used**

CGFS, Paper #48, Dec 2012
Assessment

7. Costs of applying a macro-prudential remedy
8. Uncertainty in the effects of the policy instrument
9. Optimal mix of macro-prudential tools to use

CGFS, Paper #48, Dec 2012
Managing Capital Inflow Surges

Lower Rates/Intervene

Appreciate/Intervene + Sterilize

Lower Rates/Appreciate/Intervene + Sterilize

Reserves Adequate

Exchange rate overvalued

CFMs ≡ Capital Flow Management Measures

Economy Overheating

## Asian Experience with Macro-Prudential Tools

<table>
<thead>
<tr>
<th>Objective</th>
<th>Tools</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage Pro-cyclicality</td>
<td>Countercyclical provisioning</td>
<td>China; India</td>
</tr>
<tr>
<td></td>
<td>Loan-to-value ratios</td>
<td>China; Hong Kong SAR; Indonesia; Japan; Korea; Malaysia; Philippines; Singapore; Thailand</td>
</tr>
<tr>
<td></td>
<td>Debt-service-to-income ratios</td>
<td>China; Hong Kong SAR; Korea</td>
</tr>
<tr>
<td></td>
<td>Tighter lending criteria</td>
<td>China; Hong Kong SAR; Korea; Malaysia; Philippines; Singapore; Thailand</td>
</tr>
<tr>
<td></td>
<td>Credit limits</td>
<td>China; Hong Kong SAR; India</td>
</tr>
<tr>
<td></td>
<td>Tighter supervision</td>
<td>China; Hong Kong SAR; India; Korea; Malaysia; Singapore</td>
</tr>
<tr>
<td></td>
<td>Capital requirements</td>
<td>India; Malaysia</td>
</tr>
<tr>
<td></td>
<td>Exposure limits on lending to specific sectors</td>
<td>Korea; Malaysia; Philippines; Singapore</td>
</tr>
</tbody>
</table>

Source: Morgan (2013)
Asian Experience with Macro-Prudential Tools

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<th>Objective</th>
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<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>Manage Systemic Risk</td>
<td>Capital surcharges for systemically important banks</td>
<td>China; India; Philippines; Singapore</td>
</tr>
<tr>
<td></td>
<td>Liquidity and funding requirements</td>
<td>China; India; Korea; Malaysia; Philippines; Singapore; Thailand</td>
</tr>
<tr>
<td></td>
<td>Loan-to-deposit requirements</td>
<td>China; Korea</td>
</tr>
<tr>
<td></td>
<td>FX exposure limits</td>
<td>Korea; Philippines</td>
</tr>
<tr>
<td></td>
<td>Limits on currency mismatches</td>
<td>India; Malaysia; Philippines</td>
</tr>
</tbody>
</table>

Source: Morgan (2013)
Institutional Structure
## Evolution of Institutional Arrangements…

- **Rethinking institutional boundaries**
- **Enhancing cooperation within existing structure**
- **Separation of crisis prevention & management**

<table>
<thead>
<tr>
<th>Mandate / Central Bank + Financial Supervision</th>
<th>Central Bank or Central Bank related committee</th>
<th>Committee headed by Government</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>More integration</strong></td>
<td>Belgium, Ireland, UK</td>
<td>France</td>
</tr>
<tr>
<td><strong>No change in integration</strong></td>
<td>Malaysia, Thailand</td>
<td>Chile, Mexico, Turkey, USA</td>
</tr>
</tbody>
</table>
## Central Bank vs. Macro-Prudential Council

<table>
<thead>
<tr>
<th>Multiple tools: Monetary-Macro-Prudential interaction</th>
<th>Advantages of Central Bank</th>
<th>Advantages of Council / Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination of monetary and macro-prudential instruments</td>
<td>Preventing conflicts of interest; Joint “ownership” of policies</td>
<td></td>
</tr>
<tr>
<td>Coherence: one voice to the outside world</td>
<td>Involvement implies inter-agency conflict less likely</td>
<td></td>
</tr>
<tr>
<td>Flow of “soft” information, if generated in house</td>
<td>Diversity of views: preventing “group-think”</td>
<td></td>
</tr>
</tbody>
</table>
Is There a “Preferred” Model?

• **No one-size-fits-all:** Country specificities are important in building a macro-prudential policy framework:
  - History of institutional arrangements and legal traditions
  - Political economy considerations and cultural issues
  - Availability of resources.

• All models have strengths and weaknesses
Mechanisms to Address Weaknesses

1. Discipline use of power by independent agency
2. Dealing with separation of decision making from control
3. Reducing delays in decision-making
4. Fostering cooperation among agencies
Questions

• What will convince skeptics that macro-prudential regulatory structures will forecast and diffuse systemic risk?
  – Granular data and information
  – Better assessment of systemic risks
  – Design of rules and “markers”
  – Public conversation
  – Resources, personnel
  – Political will, enforcement
  – Track record.